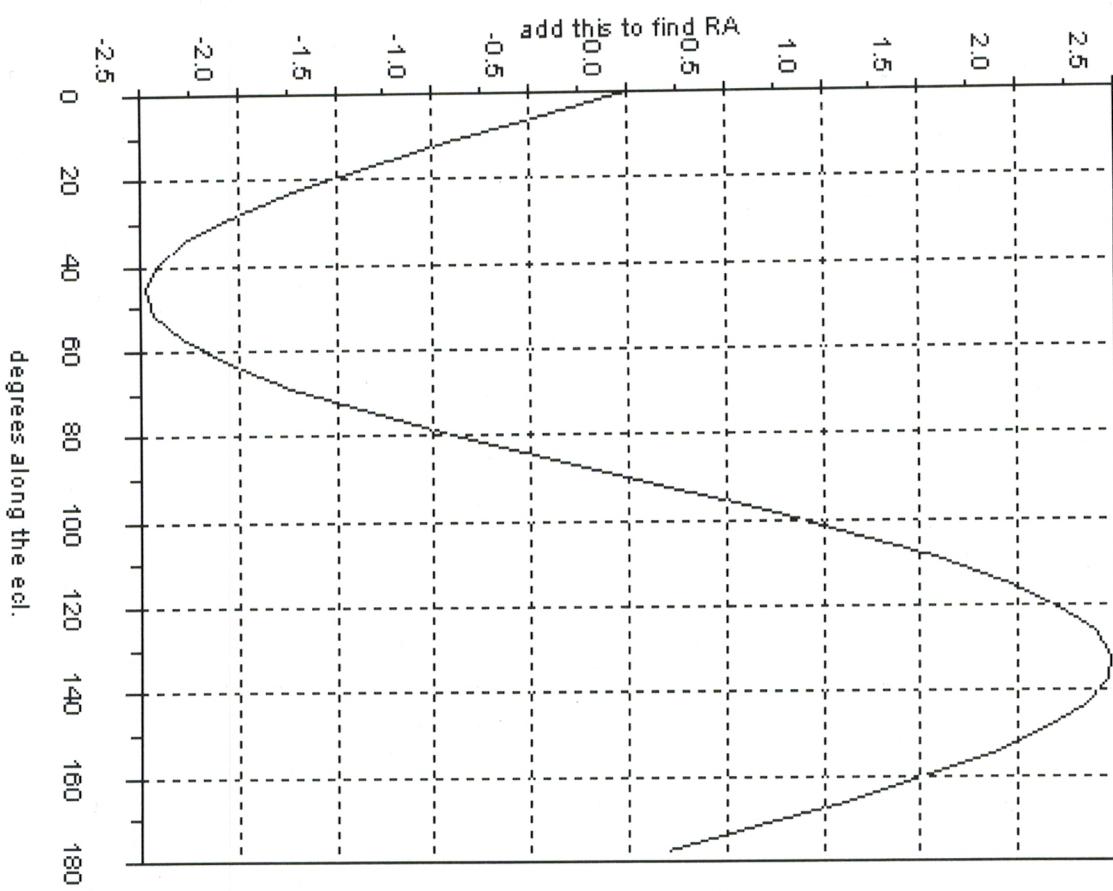
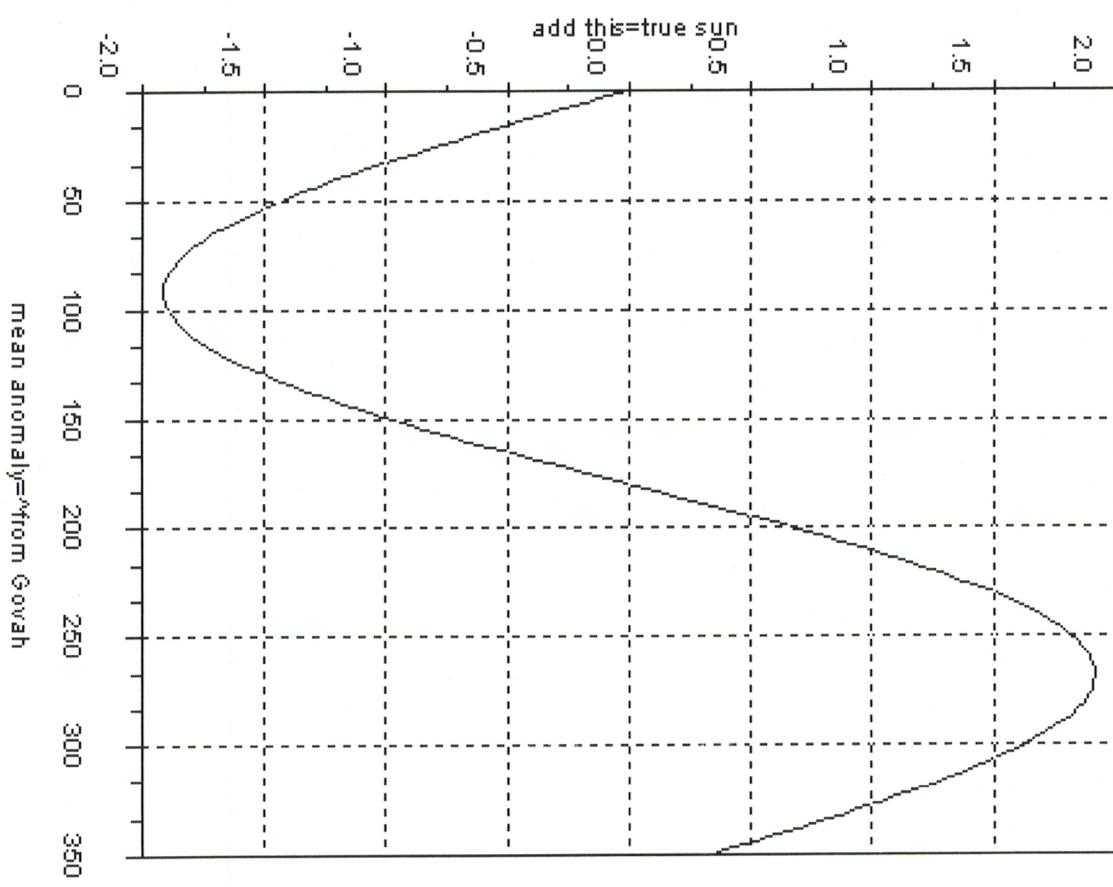
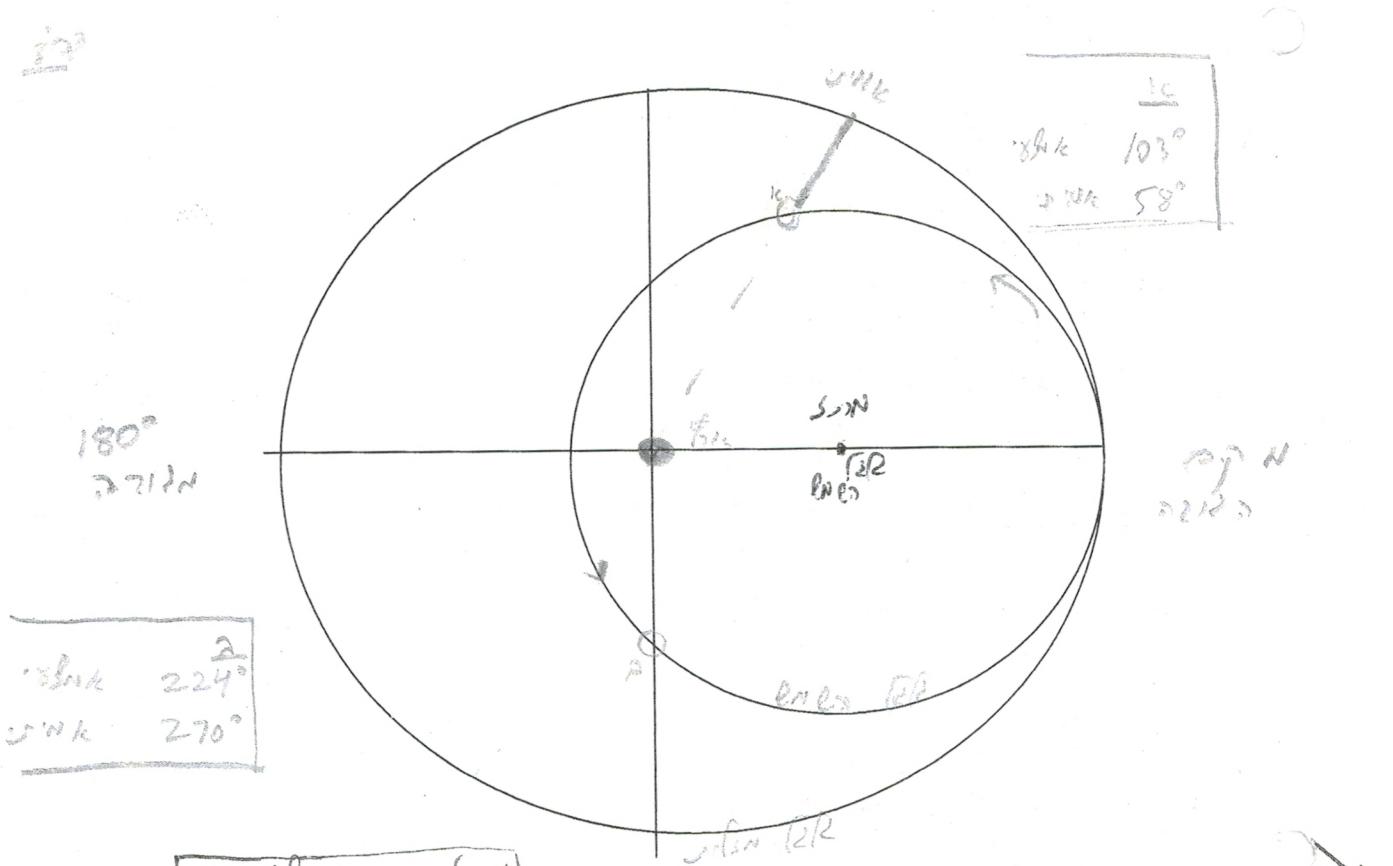


(O) to find RA of any point on ecliptic



(O) to find true sun from mean ecliptic sun





180° 221d

Days	Motion	Days	Motion	Days	Motion
100,000	284°44.0'	10,000	136°28.4'	1,000	—
200,000	209°28.0'	20,000	272°56.8'	2,000	—
300,000	134°12.0'	30,000	49°25.2'	3,000	—
400,000	58°56.0'	40,000	185°53.6'	4,000	—
500,000	343°40.1'	50,000	322°22.0'	5,000	—
600,000	268°24.1'	60,000	98°50.4'	6,000	153°53.0'
700,000	193°08.1'	70,000	235°18.8'	7,000	59°31.9'
800,000	117°52.1'	80,000	11°47.2'	8,000	325°10.7'
900,000	42°36.1'	90,000	148°15.6'	9,000	230°49.6'
100	—	10	9°51.4'	1	0°59.1'
200	—	20	19°42.8'	2	1°58.3'
300	—	30	29°34.2'	3	2°57.4'
400	—	40	39°25.6'	4	3°56.6'
500	—	50	49°16.9'	5	4°55.7'
600	231°23.3'	60	59°08.3'	6	5°54.8'
700	329°57.2'	70	68°59.7'	7	6°54.0'
800	68°31.1'	80	78°51.1'	8	7°53.1'
900	167°05.0'	90	88°42.5'	9	8°52.2'

Year	Longitude	Year	Longitude	Year	Longitude
801 B.C.	53°57'	200 A.D.	71°25'	1200 A.D.	49°60' 87°52'
701	55°42'	300	73°10'	1300	—
601	57°27'	400	74°55'	1400	—
501	59°12'	500	76°40'	1500	—
401	60°57'	600	78°24'	1600	—
301	62°41'	700	80°09'	1700	97°37'
201	64°26'	800	81°54'	1800	99°21'
101	66°11'	900	83°39'	1900	101°06'
1 B.C.	67°56'	1000	85°23'	2000	102°51'
100 A.D.	69°40'	1100	87°08'	2100	104°36'

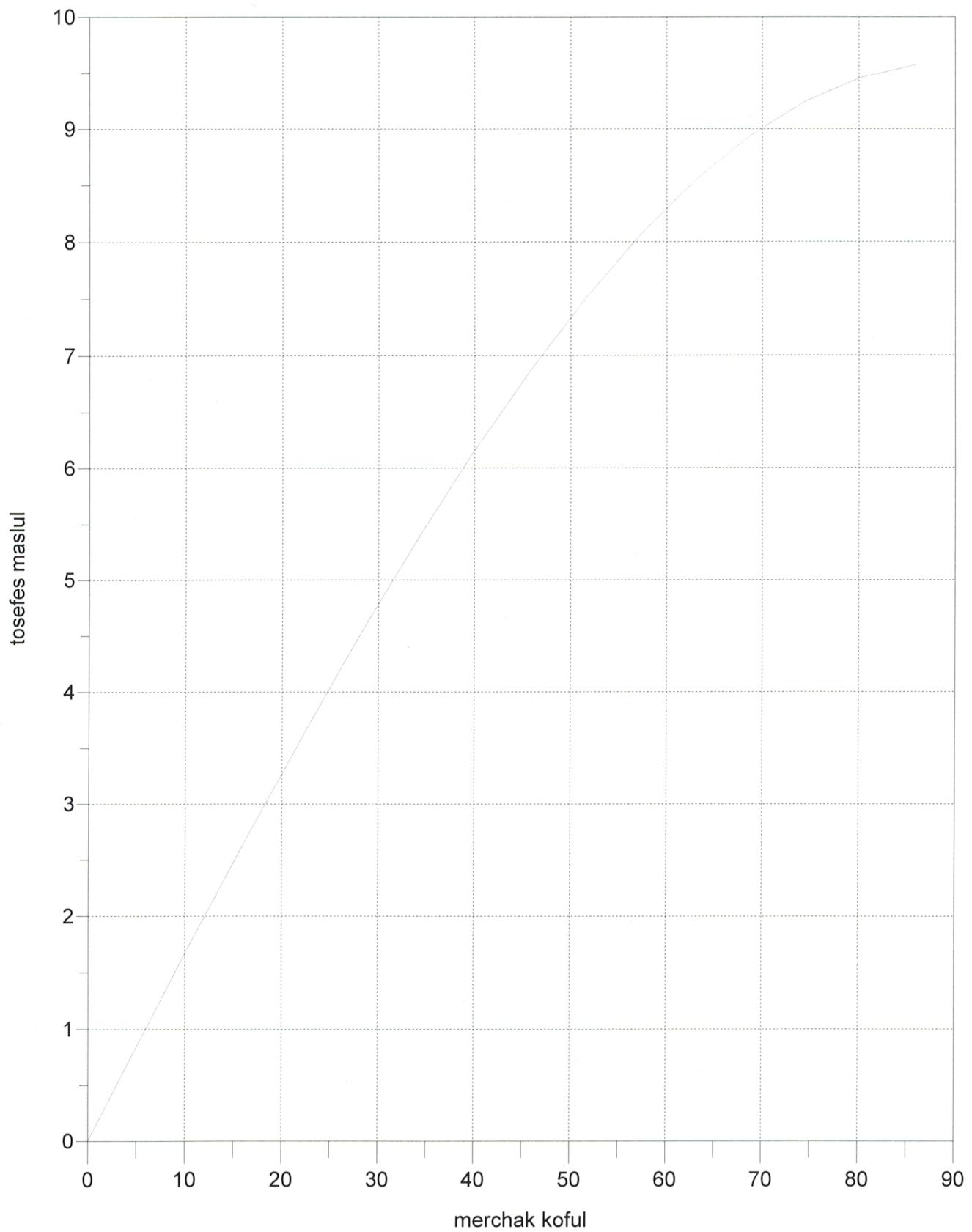
TABLE 5.3. Equation of Center of the Sun

Mean Anomaly	Equation of Center	Mean Anomaly	Equation of Center
0° (360)	-(+) 0° 0'	90° (270)	-(+) 1°55'
5° (355)	0°10'	95° (265)	1°55'
10° (350)	0°19'	100° (260)	1°54'
15° (345)	0°29'	105° (255)	1°52'
20° (340)	0°38'	110° (250)	1°49'
25° (335)	0°47'	115° (245)	1°46'
30° (330)	0°56'	120° (240)	1°41'
35° (325)	1°04'	125° (235)	1°36'
40° (320)	1°12'	130° (230)	1°30'
45° (315)	1°19'	135° (225)	1°23'
50° (310)	1°26'	140° (220)	1°16'
55° (305)	1°32'	145° (215)	1°08'
60° (300)	1°38'	150° (210)	0°59'
65° (295)	1°43'	155° (205)	—
70° (290)	1°47'	160° (200)	—
75° (285)	1°50'	165° (195)	—
80° (280)	1°52'	170° (190)	—
85° (275)	1°54'	175° (185)	—
90° (270)	1°55'	180° (180)	—

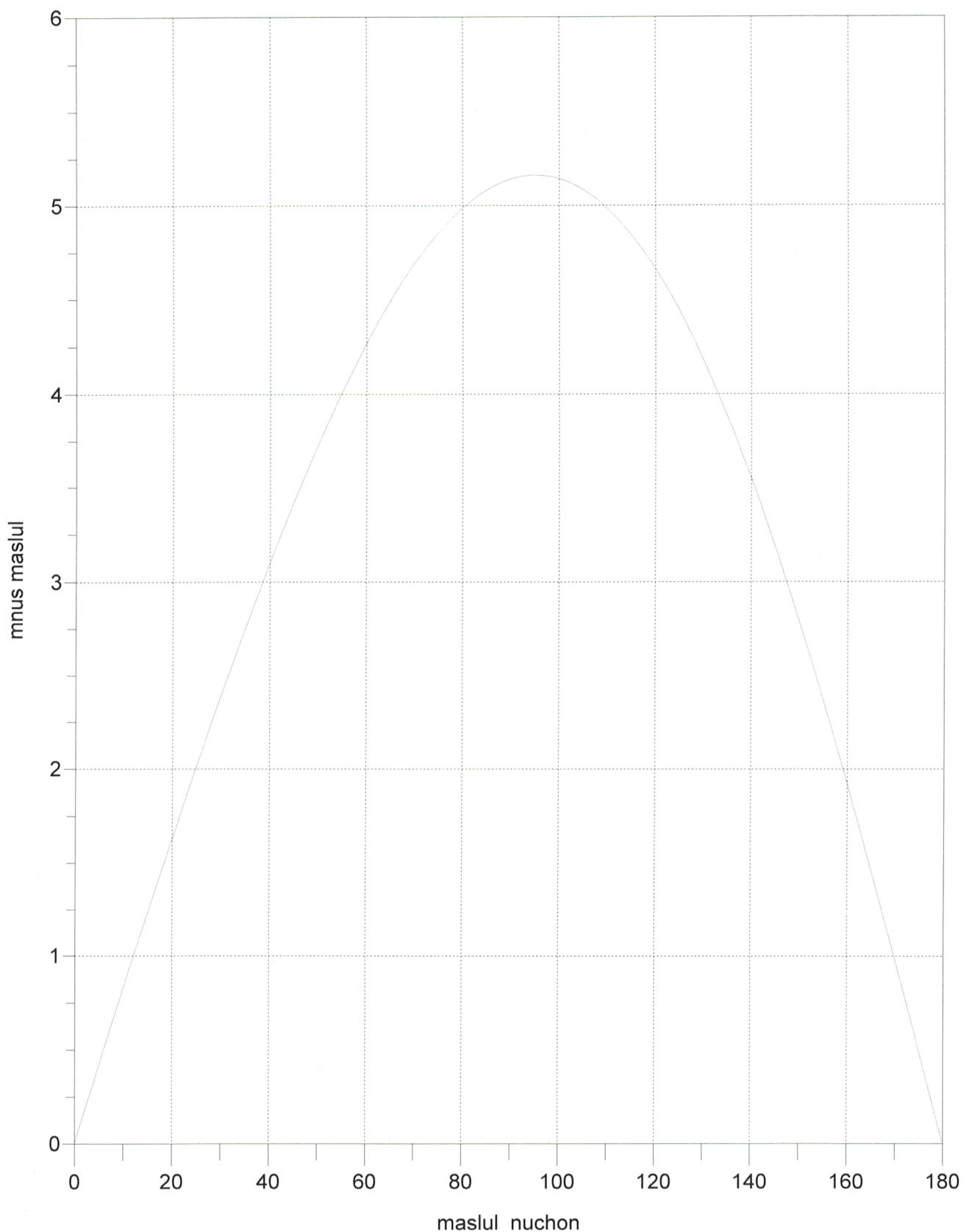
180° N

180° N - 221d

$\text{asin } \sin x/6$

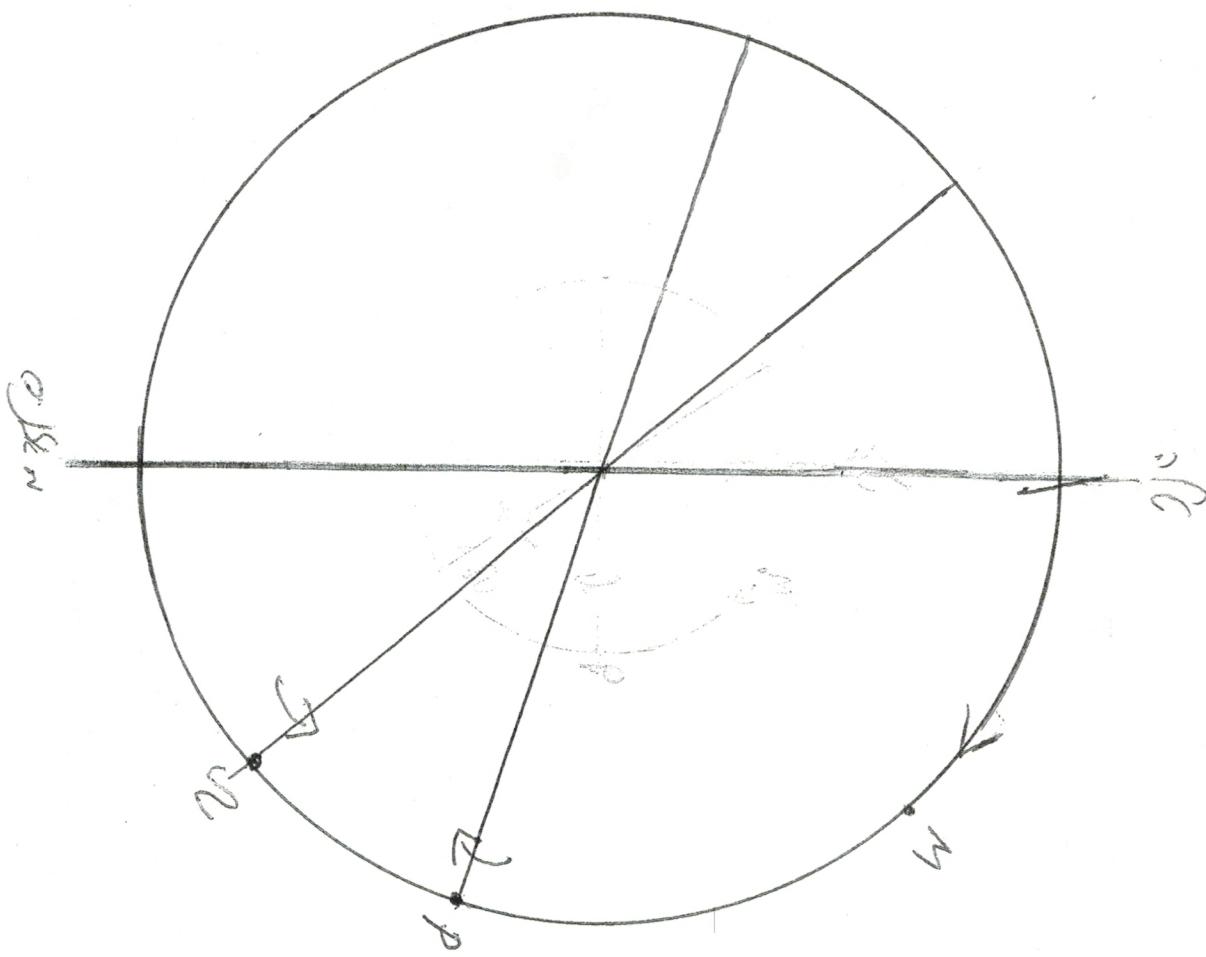


atan sin maslul / 11.12+cos maslul



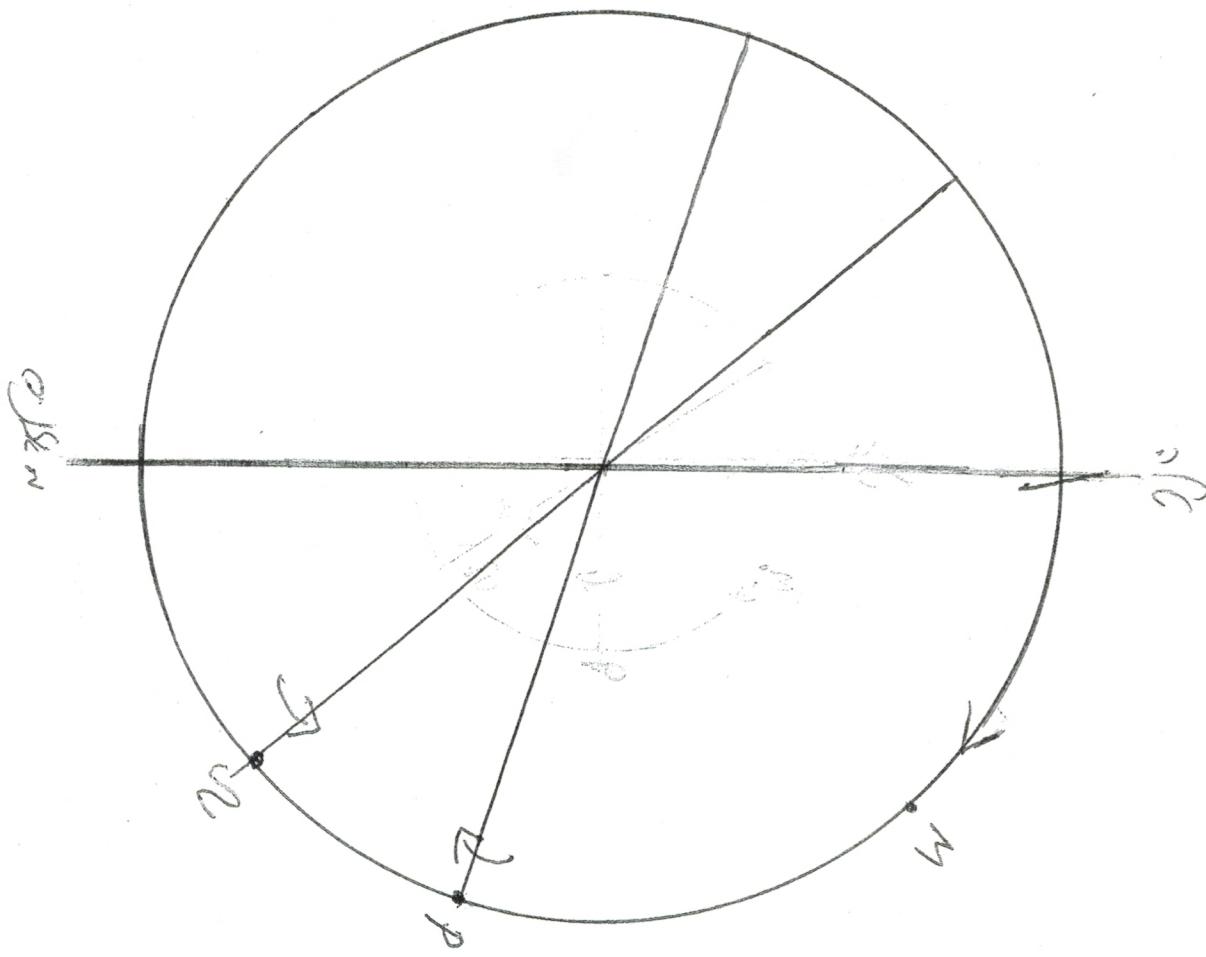
length of month

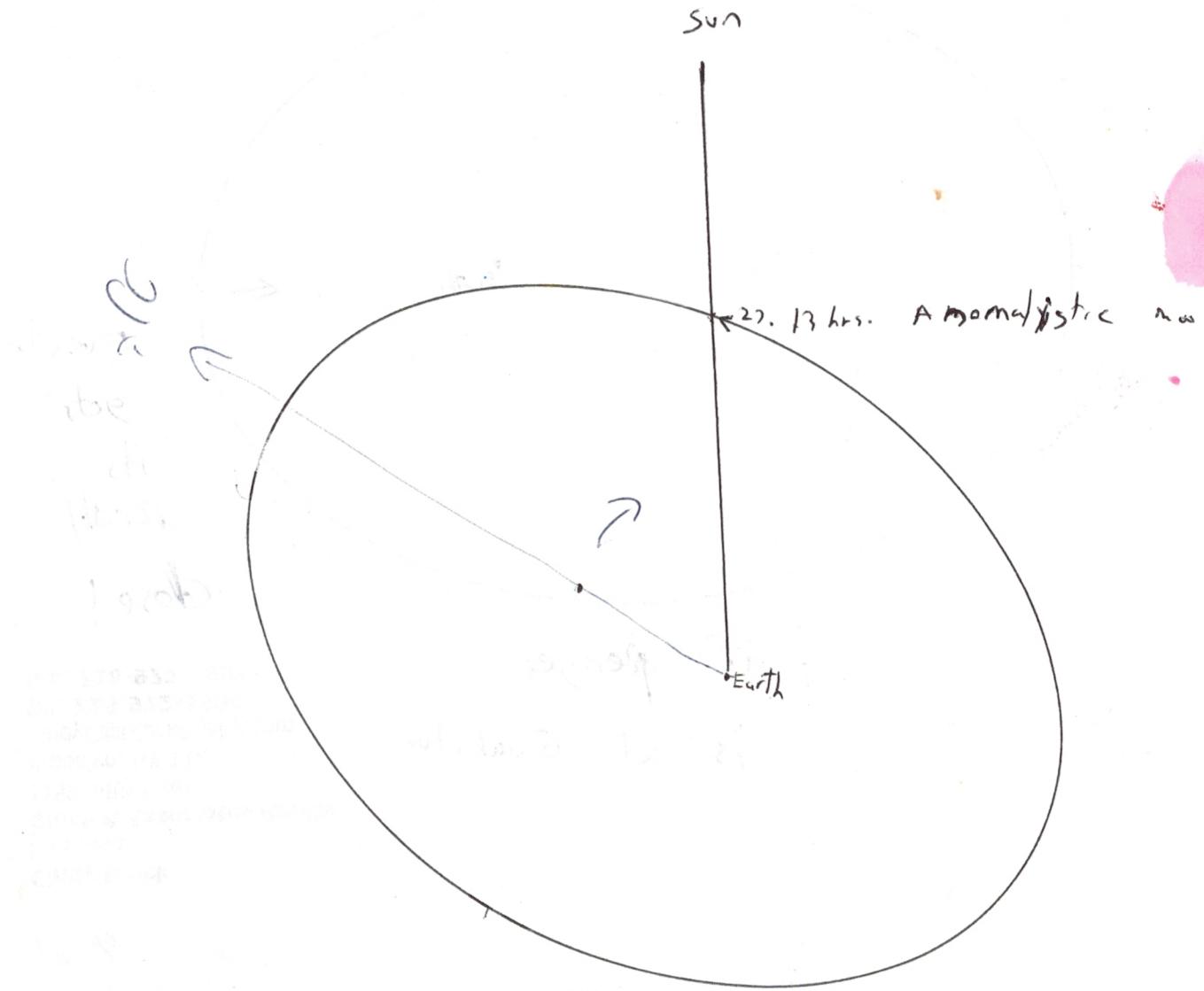
sidereal month 27.321661547
 tropical month 27.321582241
 anomalistic month 27.554549878
 draconic month 27.212220817
 synodic month 29.530588853



length of month

sidereal month 27.321661547
 tropical month 27.321582241
 anomalistic month 27.554549878
 draconic month 27.212220817
 synodic month 29.530588853





Convection depends

on sun + moon.



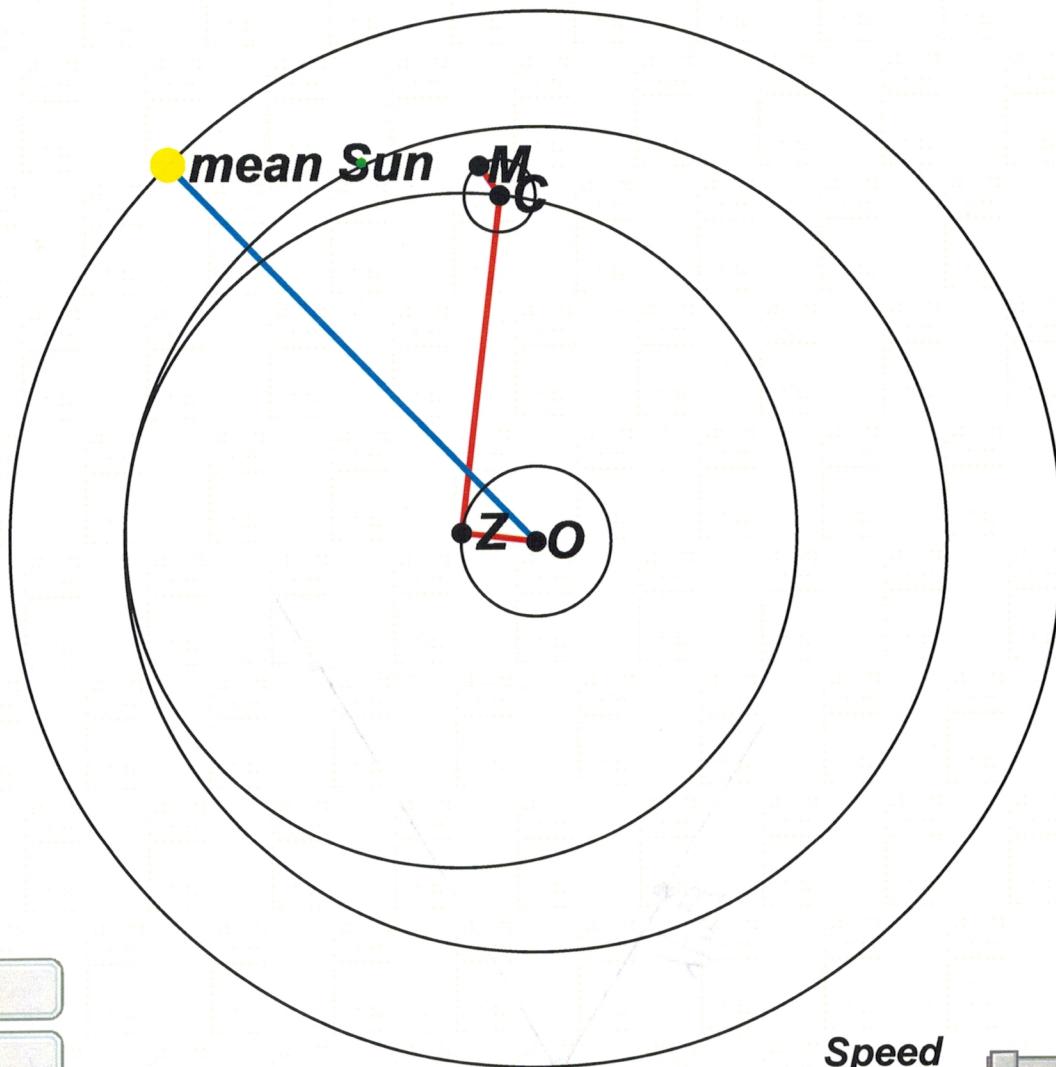
flow \rightarrow sink \leftarrow " add'l

speed \rightarrow y'e \leftarrow flx

flow \rightarrow sink \leftarrow flx

Average. At "sun" flow \rightarrow sink \leftarrow flx
 "C.P." flow \rightarrow sink \leftarrow flx
 "C.P." flow \rightarrow sink \leftarrow flx

Moon



Trail on/off

clear trail

Speed



column 61 to 65

55. 56. 57. 58. 59. 4.0058201 4.0589766 4.1110832 4.1621229 4.2120783

column 56 to 60

50. 51. 52. 53. 54. 3.7249015 3.7830447 3.8402259 3.8964273 3.9516312

column 51 to 55

45. 46. 47. 48. 49. 3.4203807 3.4830653 3.5448779 3.6058001 3.6658139

column 46 to 50

40. 41. 42. 43. 44. 3.0945147 3.1612857 3.2272763 3.2924678 3.3568421

column 41 to 45

35. 36. 37. 38. 39. 2.749602 2.8199968 2.8897042 2.9587054 3.0269818

column 36 to 40

30. 31. 32. 33. 34. 2.3879728 2.4615232 2.5344802 2.6068249 2.6785384

column 31 to 35

25. 26. 27. 28. 29. 2.0119814 2.088215 2.1639499 2.2391672 2.3138478

column 26 to 30

20. 21. 22. 23. 24. 1.6240002 1.7024413 1.7804791 1.8580944 1.9352682

column 21 to 25

15. 16. 17. 18. 19. 1.2264144 1.3065851 1.3864482 1.4659845 1.5451749

column 16 to 20

10. 11. 12. 13. 14. 0.8216182 0.9030391 0.9842484 1.0652268 1.1459552

column 11 to 15

5. 6. 7. 8. 9. 0.4120120 0.4942027 0.5762779 0.6582183 0.7400048

column 6 to 10

0. 1. 2. 3. 4. 0.0824794 0.1649395 0.2473612 0.3297251

Untitled

column 66 to 70

column 71 to 75

4.488102 4.5300003 4.5706823 4.6101324 4.6483347

column 76 to 80

4.685274 4.7209349 4.7553023 4.7883615 4.8200976

column 81 to 85

4.8504964 4.8795436 4.9072251 4.9335274 4.9584369

column 86 to 90

4.9819404 5.004025 5.024678 5.043887 5.06164

column 91 to 95

5.0779251 5.092731 5.1060465 5.1178608 5.1281634

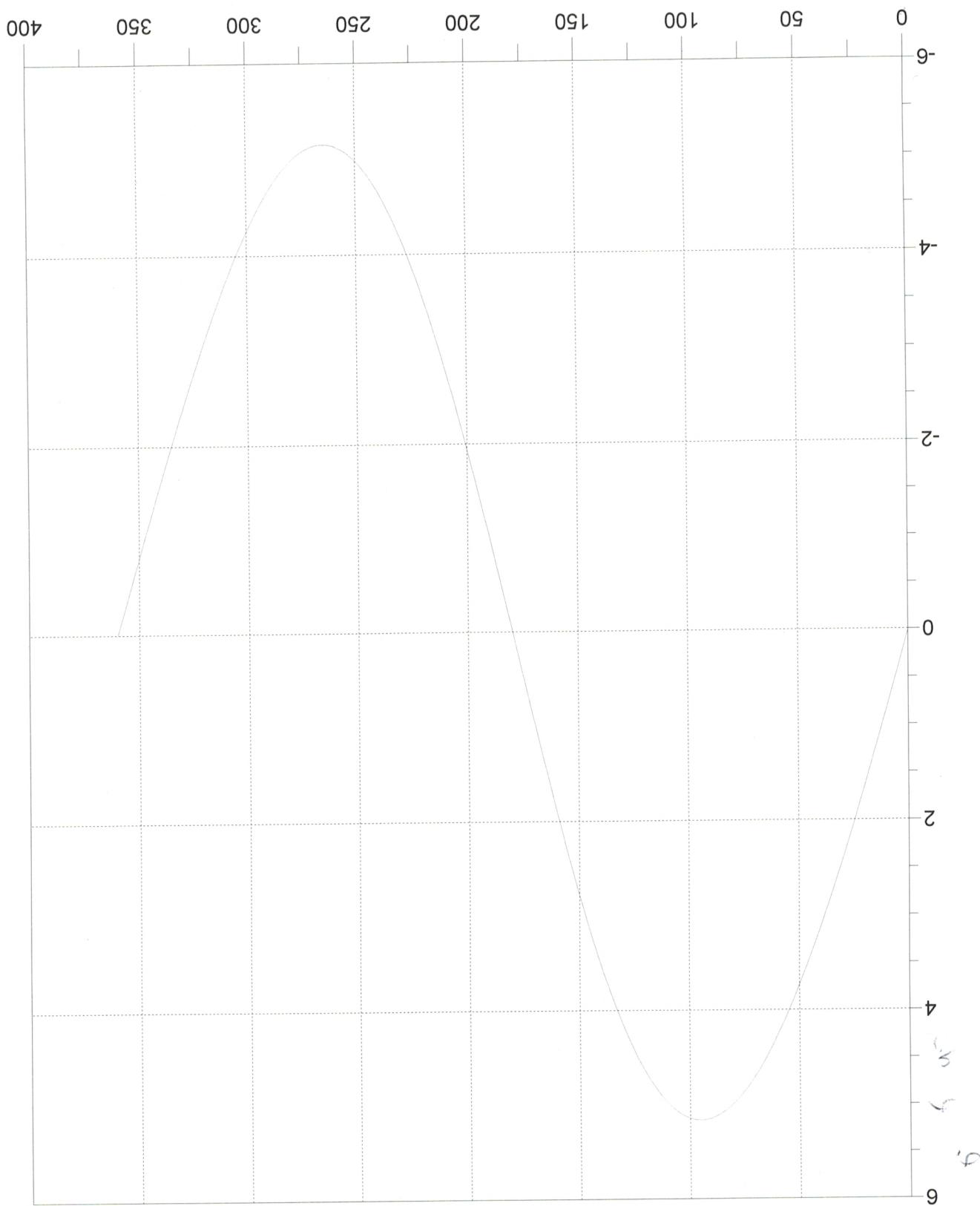
column 96 to 100

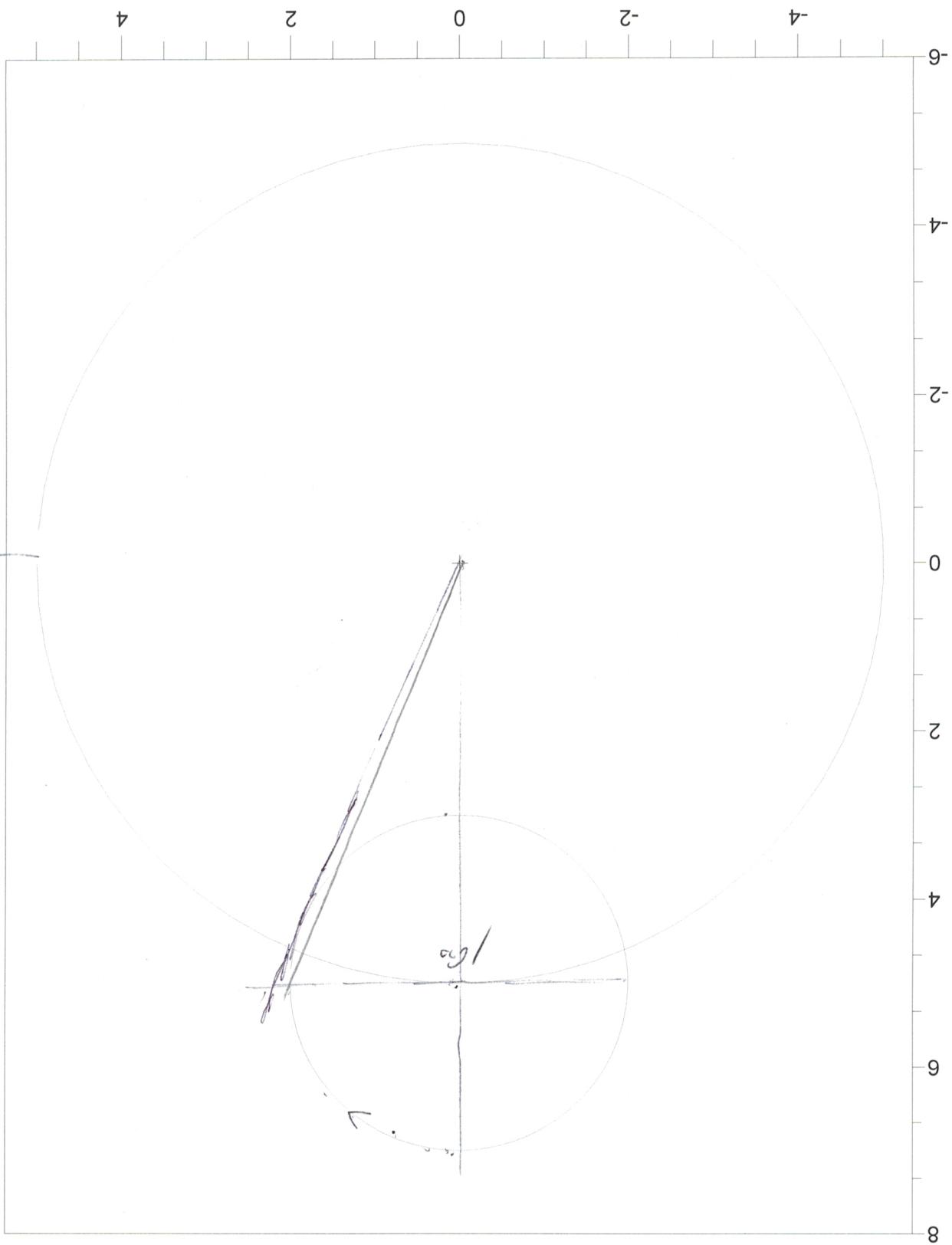
5.1369443 5.1441938 5.1499025 5.1540614 5.1566621

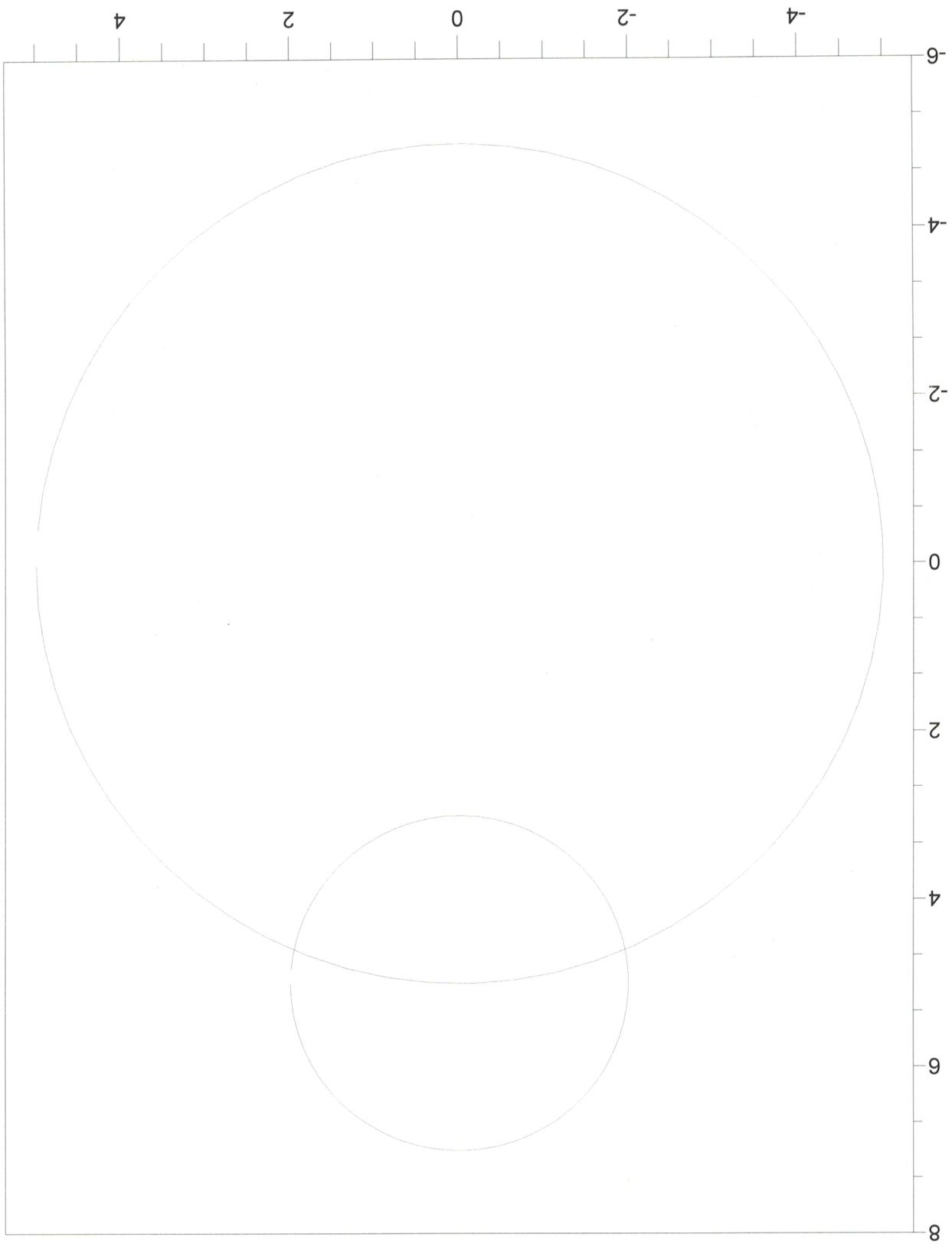
column 101

95. 96. 97. 98. 99. 95.1576963 5.1571563 5.1550349 5.1513251 5.1460207

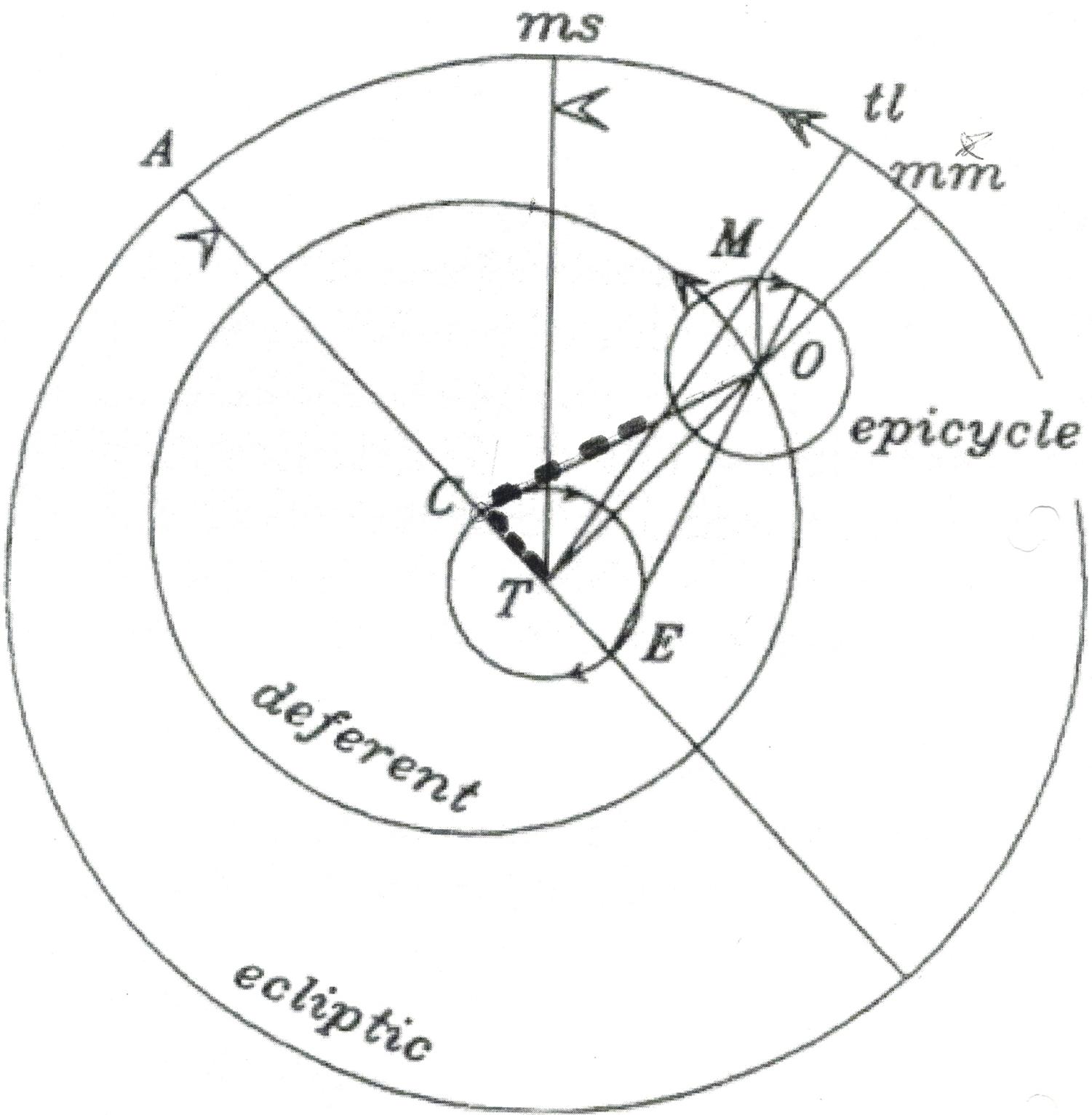
100. 100.1391155







$\tau = \varphi / k$



m_s : Mean Sun

m_m : " moon"

α : true long. long.

13.6x
A Co

2006

2007

2008

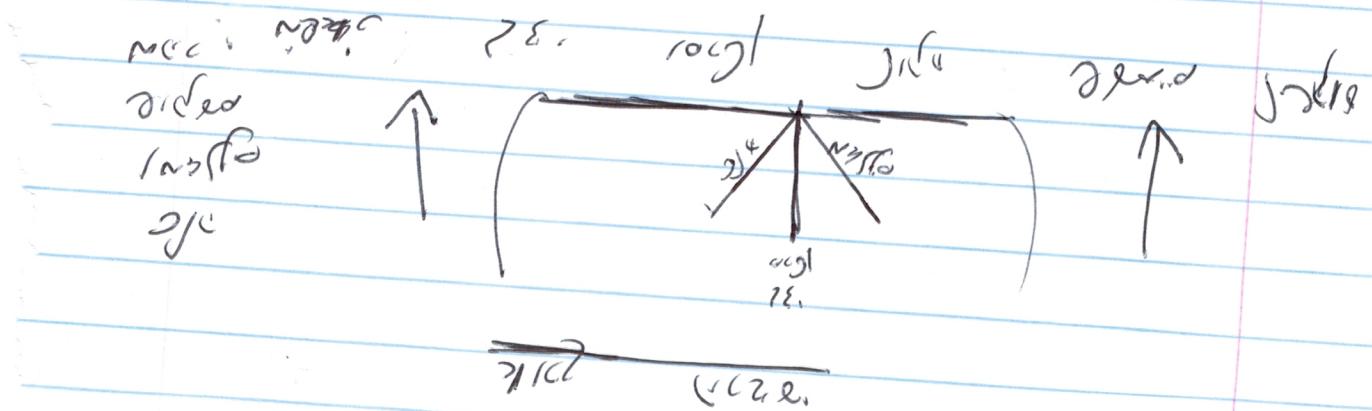
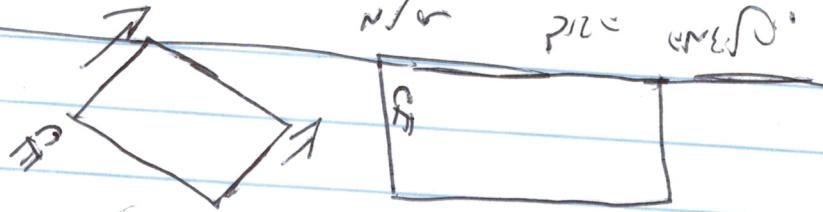
2009

aphelion Jan 3 20 Equinoxes Mar 21 00 07 Sept 23 09 51
perihelion July 7 00 Solstices June 21 18 06 Dec 22 06 08

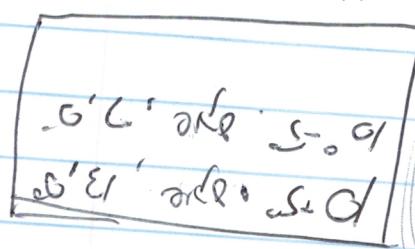
aphelion Jan 4 15 Equinoxes Mar 20 18 26 Sept 23 04 03
perihelion July 3 23 Solstices June 21 12 26 Dec 22 00 22

aphelion Jan 3 20 Equinoxes Mar 21 00 07 Sept 23 09 51
perihelion July 7 00 Solstices June 21 18 06 Dec 22 06 08

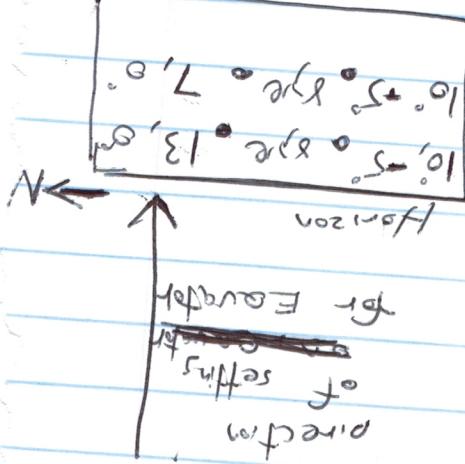
aphelion Jan 3 20 Equinoxes Mar 21 00 07 Sept 23 09 51
perihelion July 7 00 Solstices June 21 18 06 Dec 22 06 08



N ← Horizon

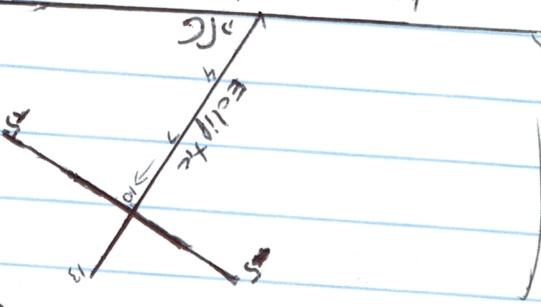


N ←



standing on Earth
Horizon for person

looking at person

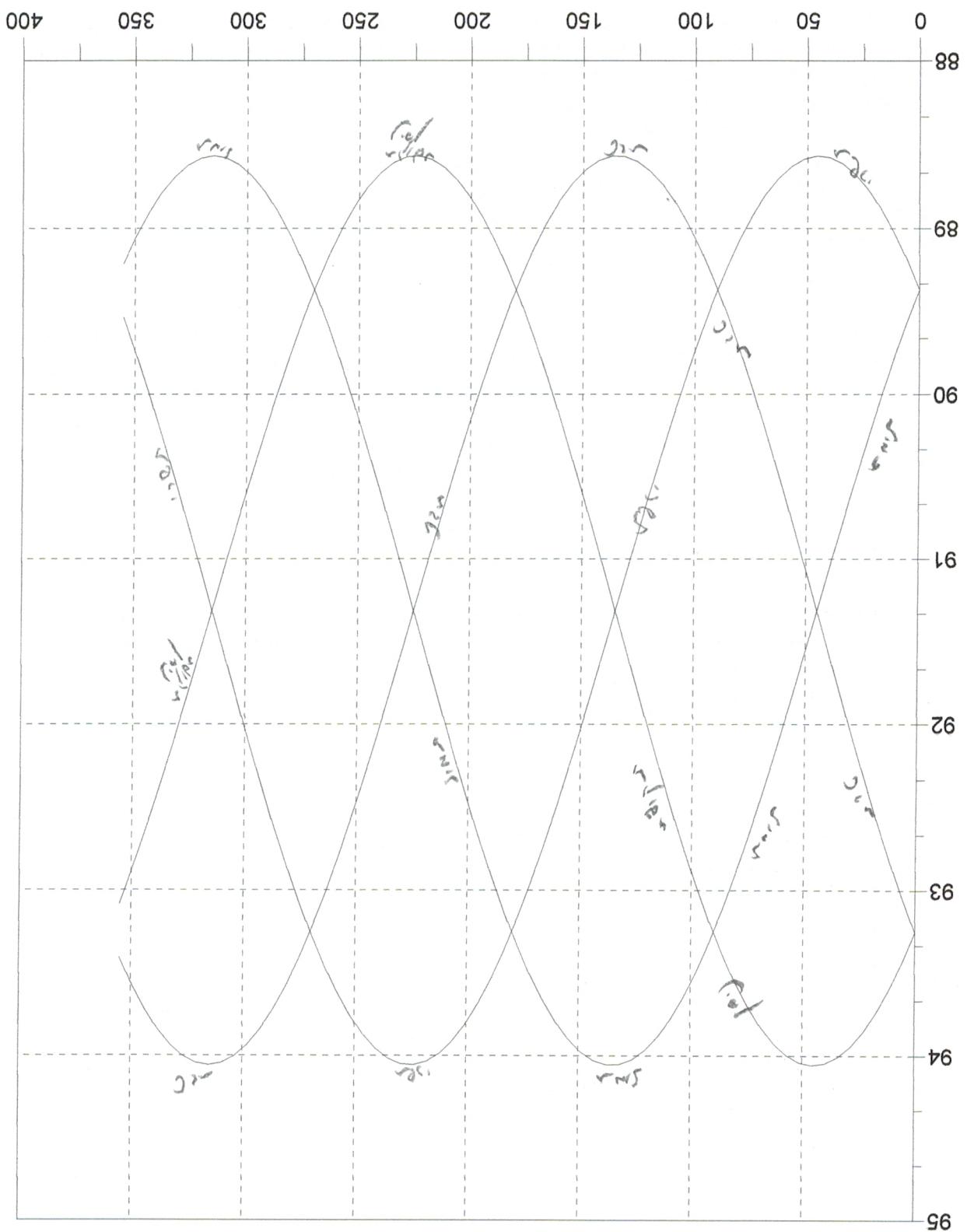


S →

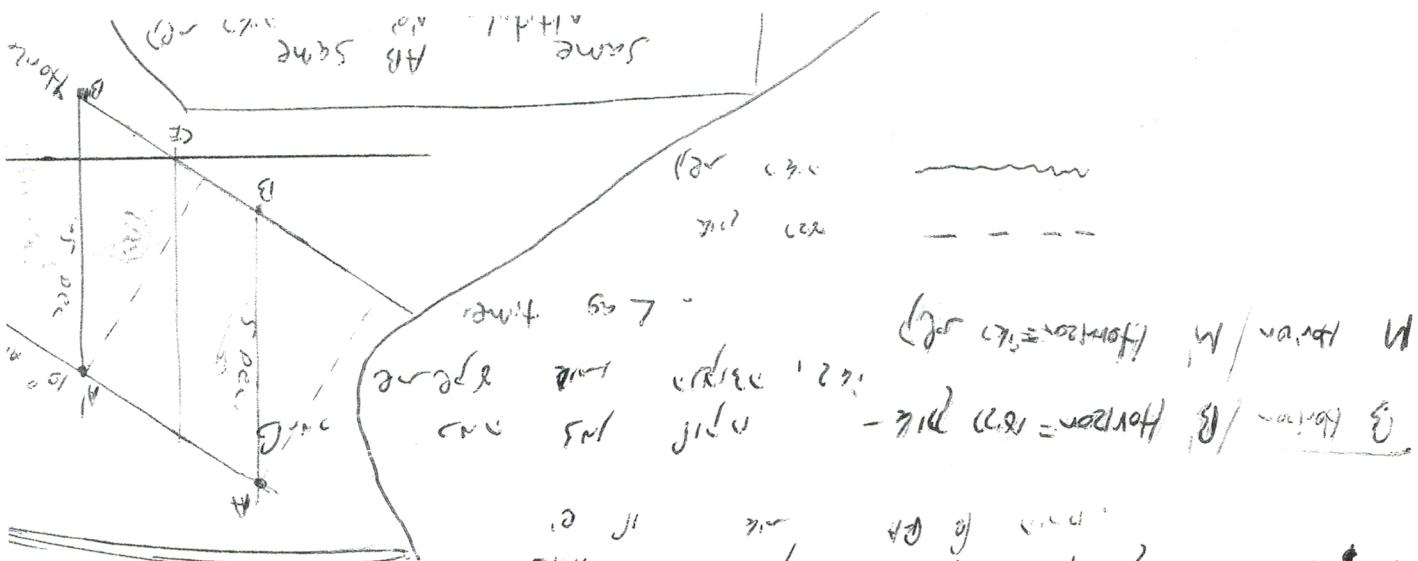
$\theta = \phi$

eye

core



11 Dec 1969



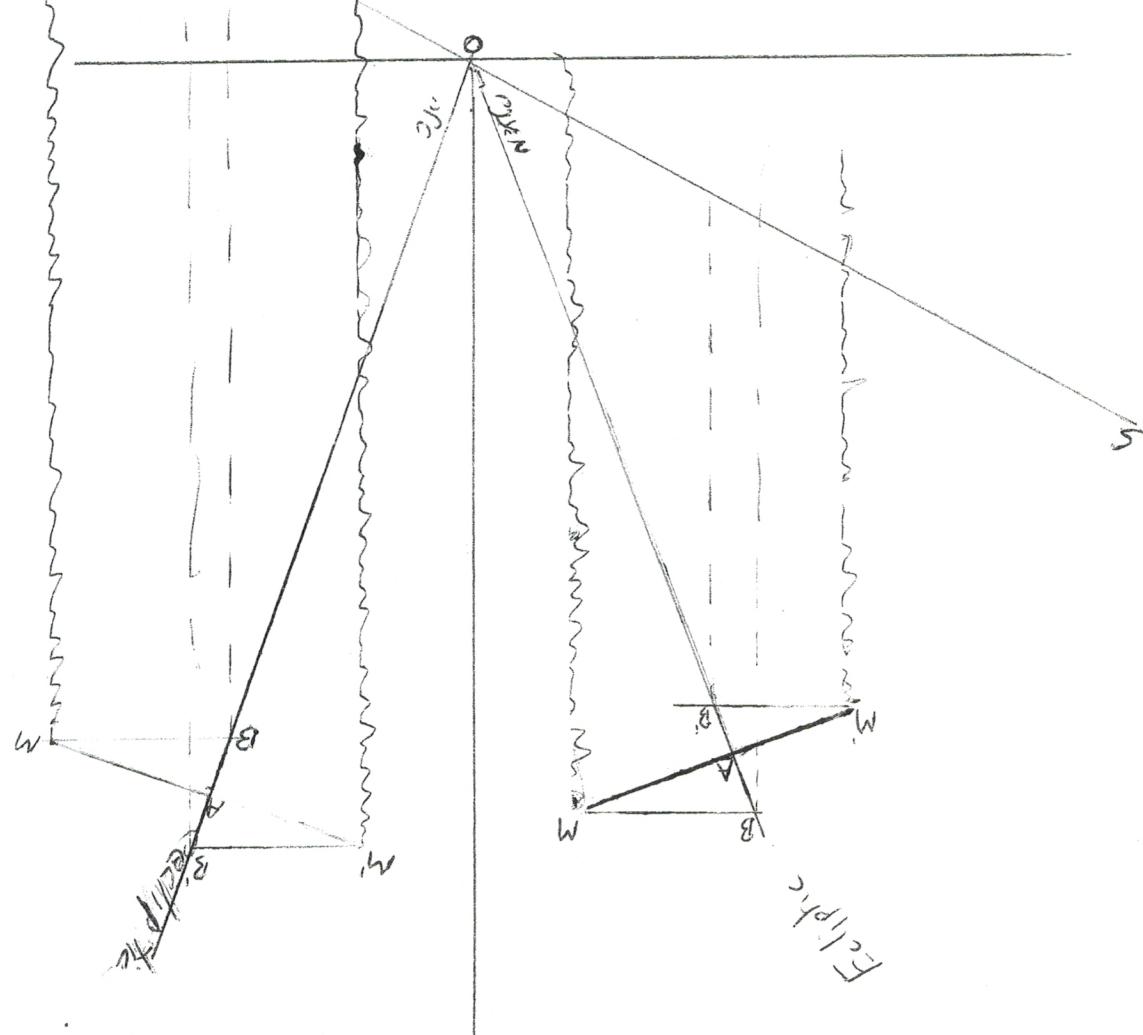
$M_{\text{Horizon}} / M_{\text{Horizon}} = 1.87 \text{ miles}$

$B_0 / B_0 = 1.87 \text{ miles, depth} = 350 \text{ miles}$

$A_0 = 350 \text{ miles}, M_0, M_0 = 350 \text{ miles}$

$M = 1.87 \text{ miles}, M = 350 \text{ miles}$

$R_{\text{Hilbert}} = 350 \text{ miles} : 1.87 \text{ miles}$



3.22
JULY
10/03

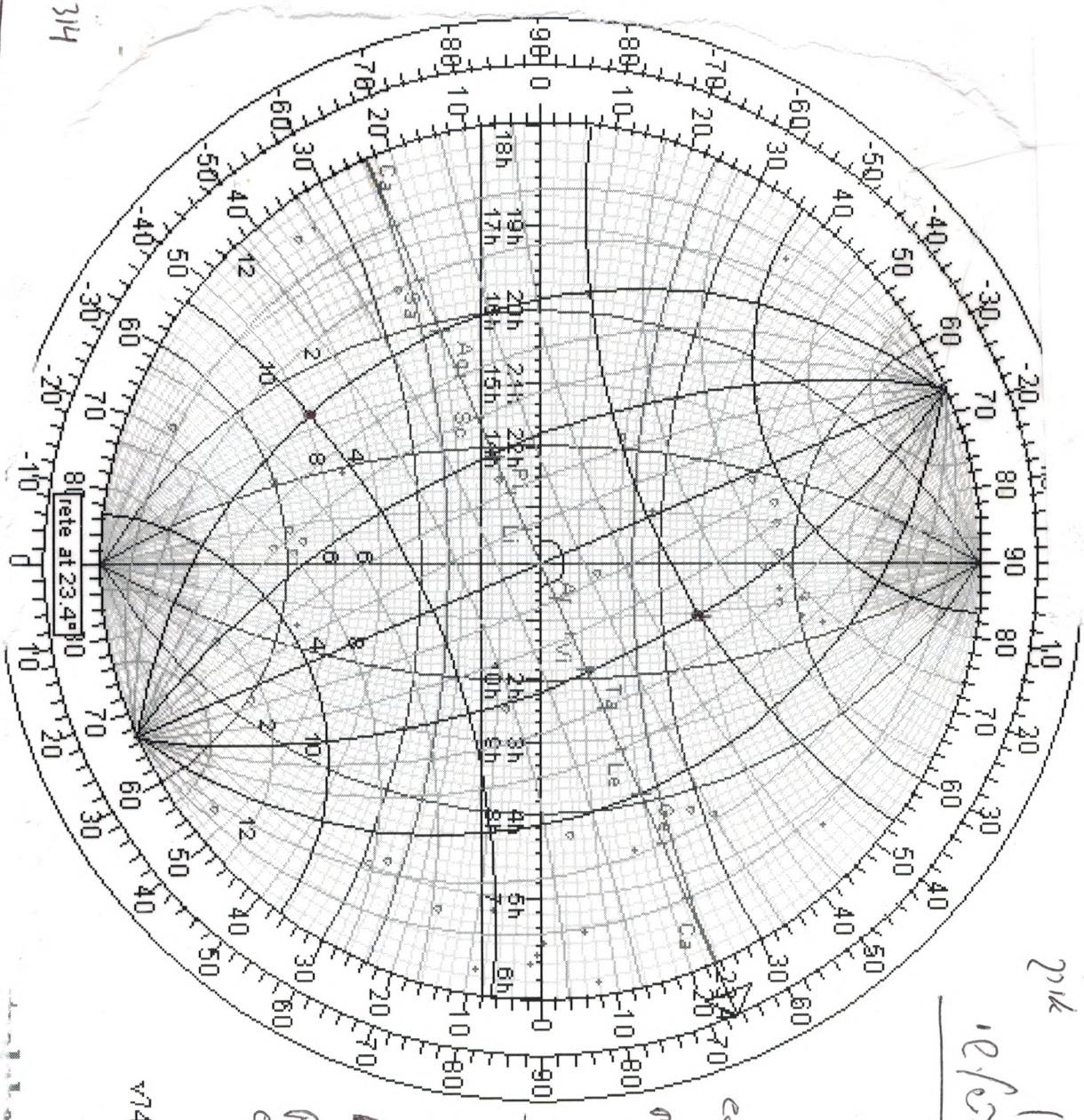
Convert ecliptic

) Coordinate into RA

2) find ecliptic point,

with same RA

(usually within $\pm 2^\circ$)



δ

ecl. $30^\circ, 30'$

RA $15^\circ, 40'$

Point on
ecl. $> 15^\circ$

or

ecl. $150^\circ, 30'$

RA $165^\circ, 40'$

Point on
ecl. $< 165^\circ$

ecl.

$30^\circ, -30'$

RA = $314^\circ, -50'$

Point on ecl. $< 314^\circ$

or

RA $24^\circ, -50'$

Point on ecl. $> 24^\circ$